

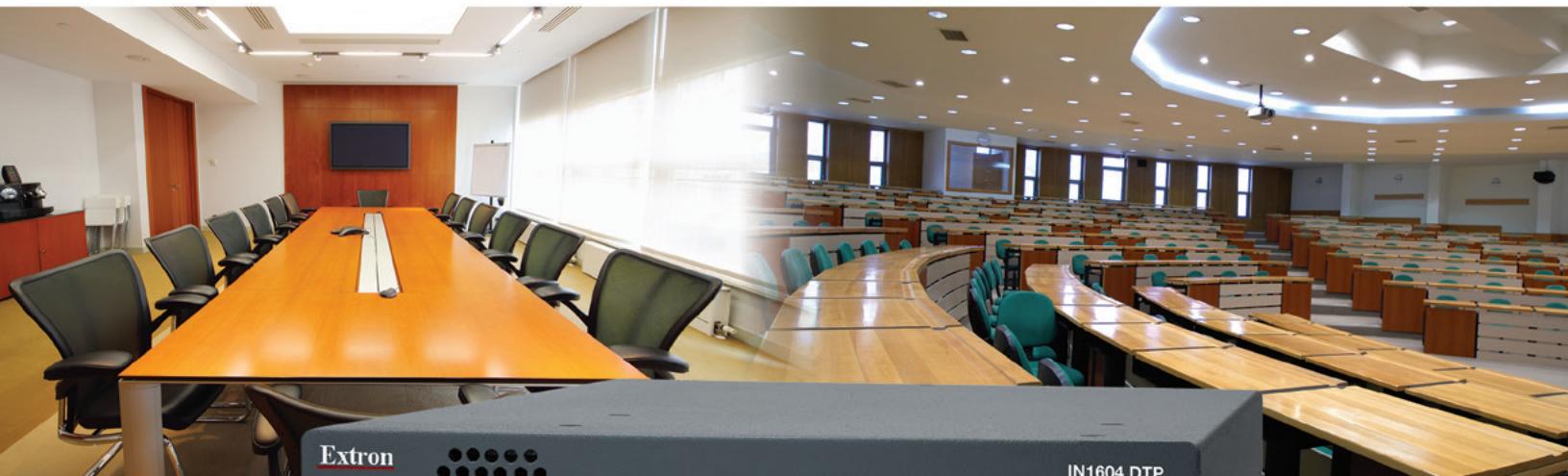
IN1604

FOUR INPUT HDCP-COMPLIANT SCALER



Comprehensive AV Signal Processing
in a Compact Enclosure

- ▶ Integrates HDMI, analog video, and audio sources into presentation systems
- ▶ Three HDMI inputs and one universal analog video input
- ▶ Available DTP or HDMI output
- ▶ Auto-switching between inputs
- ▶ High performance scaling engine with 30-bit processing and 1080i deinterlacing
- ▶ HDMI audio embedding and de-embedding
- ▶ Available DTP output extends HDMI, control, and analog audio up to 330 feet (100 meters) over one shielded CATx cable



Extron Electronics
INTERFACING, SWITCHING AND CONTROL

Introduction

The Extron **IN1604 DTP** and **IN1604 HD** are HDCP-compliant scalers with three HDMI inputs, a universal analog video input, and an Extron DTP or HDMI output, in a compact 1U, half rack enclosure. The IN1604 is ideal for installation beneath conference tables and in lecterns to provide localized switching support for sources such as presenter devices. The IN1604 DTP allows signal extension up to 330 feet (100 meters) over shielded CATx cable to reach a wall or ceiling-mounted display. Both IN1604 models provide the convenience of fast and reliable switching, along with a high performance scaling engine for HDMI and analog video sources. The universal analog input is configurable for RGB, HDTV, component video, S-video, or composite video. Also included are a host of audio processing features and many versatile options for control.

Built for Digital Video Integration

To simplify integration of HDMI sources and displays, and to help ensure optimal system performance and dependability, the IN1604 features three Extron-exclusive technologies: EDID Minder®, Key Minder®, and SpeedSwitch®. EDID Minder and Key Minder automatically manage EDID communication and HDCP key negotiation between input and output devices to ensure reliable operation. With SpeedSwitch Technology, the IN1604 delivers exceptional switching speeds for HDCP-encrypted content.

High Performance Video Processing

The IN1604 features an advanced scaling engine that can scale HDMI, RGB, component, and standard definition video signals to a common high resolution output. It provides high performance 1080i deinterlacing and Deep Color processing to deliver optimal image quality. The IN1604 accepts and outputs signals up to 1920x1200, including HDTV 1080p/60 and 2K.



The IN1604 features intuitive on-screen menus for setup, operation, and monitoring using the front panel controls.

Integrated Digital Twisted Pair Extension

The IN1604 DTP twisted pair output can extend video, audio, and bidirectional control signals up to 330 feet (100 meters) to a DTP 330 receiver, or up to 230 feet (70 meters) to a DTP 230 receiver in a remote location. The IN1604 DTP can also send power to the DTP receiver over the same shielded CATx cable, streamlining system design and installation. DTP 230 and DTP 330 receivers are available in compact, low-profile enclosures or Decora® wallplate versions to suit installation requirements.

HDBaseT-Compatible Output

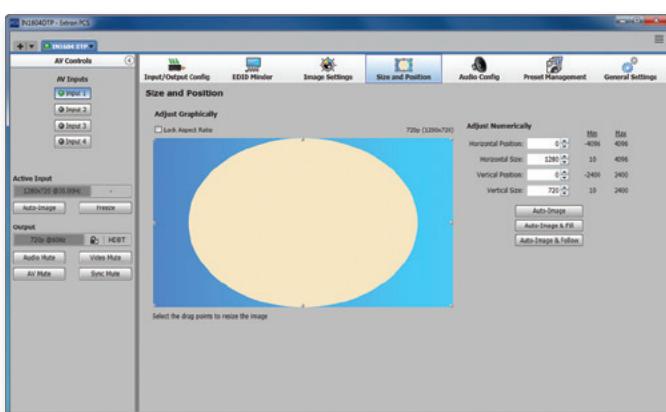
The IN1604 DTP can be configured for compatibility with an HDBaseT-enabled display to send digital video and embedded audio, plus bidirectional RS-232 and IR signals up to 330 feet (100 meters) over a shielded CATx cable.

Audio Integration Capabilities

The IN1604 delivers essential audio integration capabilities, including HDMI audio embedding and de-embedding, and flexible audio switching with two individually assignable analog audio inputs. Audio configuration settings include gain and attenuation for each analog input, output volume, and selectable audio muting.

Multiple Options for Control and Configuration

The IN1604 features front panel controls and on-screen menus for quick access to functions. It also features automatic switching between inputs to streamline system operation when the unit is installed in a lectern or under a conference table. Remote configuration and control are available via USB and RS-232, plus contact closure with tally for input switching. The IN1604 can be configured using PCS, which allows for expedited setup and commissioning, as well as real-time operation and monitoring.



Extron Product Configuration Software allows for expedited setup and commissioning, as well as real-time operation and monitoring.

Features

Three HDMI inputs and one universal analog video input

The IN1604 allows for switching between digital and analog video sources. The universal analog video input accepts all standard analog video formats, including RGB, HD component video, S-video, and composite video.

DTP or HDMI output

The IN1604 DTP supports digital signal transmission of video, analog audio, and control up to 330 feet (100 meters) over a single shielded CATx cable. The DTP receiver can be remotely powered over the twisted pair connection. The IN1604 HD is equipped with an HDMI output.

IN1604 DTP Features

Compatible with all DTP Series receivers and DTP-enabled products

Compatible with CATx shielded twisted pair cable

Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance

Bidirectional RS-232 and IR insertion for AV device control

Bidirectional RS-232 and IR signals can be transmitted alongside the video signal over the DTP connection, simplifying integration with a control system for managing a display.

DTP output is compatible with HDBaseT-enabled devices

The IN1604 DTP can be configured to send video and embedded audio, plus bidirectional RS-232 and IR signals to an HDBaseT-enabled display.

Auto-switching between inputs

Allows for simple, unmanaged installation in locations such as in a lectern or under a conference table.

Selectable output rates

Available output rates include computer-video up to 1920x1200, HDTV rates up to 1080p/60, and 2K.

Advanced scaling engine with 30-bit processing and 1080i deinterlacing

Image scaling and video format conversion are performed at 30-bit precision for enhanced color accuracy and picture detail.

Audio integration and processing

The IN1604 delivers essential audio integration capabilities, including flexible audio switching with two individually assignable analog audio inputs, switching transitions, gain and attenuation adjustments for each analog input, output volume control, and audio muting.

HDMI audio embedding

Analog audio signals can be embedded onto the DTP or HDMI output.

HDMI audio de-embedding

Embedded HDMI two-channel PCM audio can be extracted to the analog outputs, or multi-channel bitstream formats can be passed to the DTP or HDMI output.

HDCP compliant

The IN1604 fully supports HDCP-encrypted sources, with selectable authorization for unencrypted content.

Supported HDMI specification features include data rates up to 6.75 Gbps, Deep Color, and HD lossless audio formats

Extron-exclusive digital video technologies

The IN1604 includes EDID Minder, Key Minder, and SpeedSwitch to simplify integration of HDMI source and display devices, and to help ensure optimal system performance and dependability.

HDCP Visual Confirmation

When processing HDCP-encrypted content, the IN1604 outputs a full-screen green signal when the video output is connected to a non-HDCP compliant display, providing immediate visual confirmation that protected content cannot be viewed on the display.

HDMI to DVI Interface Format Correction

Automatically enables or disables embedded audio and InfoFrames, and sets the correct color space for proper connection to HDMI and DVI displays.

Aspect Ratio Control

The aspect ratio of the video output can be controlled by selecting a FILL mode, which provides a full screen output, or a FOLLOW mode, which preserves the original aspect ratio of the input signal.

Seamless switching

Seamless cut through black and fade through black transition effects are available

to enhance presentations by eliminating distractions during switching.

Auto-Image™ Setup

When activated, the unit automatically optimizes the image by analyzing and adjusting to the video input signal. This saves time and effort in setting up a newly connected source.

Auto Input Memory

When activated, the IN1604 automatically stores size, position, and picture settings based on the incoming signal. When the same signal is detected again, these image settings are automatically recalled from memory.

Output Standby Mode

The unit can be set to automatically mute video and sync output to the display device when no active input signal is detected. This allows the projector or flat-panel display to automatically enter into standby mode to save energy and enhance lamp or panel life.

Power Save Mode

The IN1604 can be placed in a low power standby state to conserve energy when not in use.

Picture controls for brightness, contrast, color, tint, detail, as well as horizontal and vertical positioning, and sizing

Automatic 3:2 and 2:2 pulldown detection

Quad standard video decoding

A temporal, 3D adaptive comb filter provides advanced decoding of composite NTSC 3.58, NTSC 4.43, PAL, and SECAM for integration into systems worldwide.

Internal video test patterns and pink noise generator

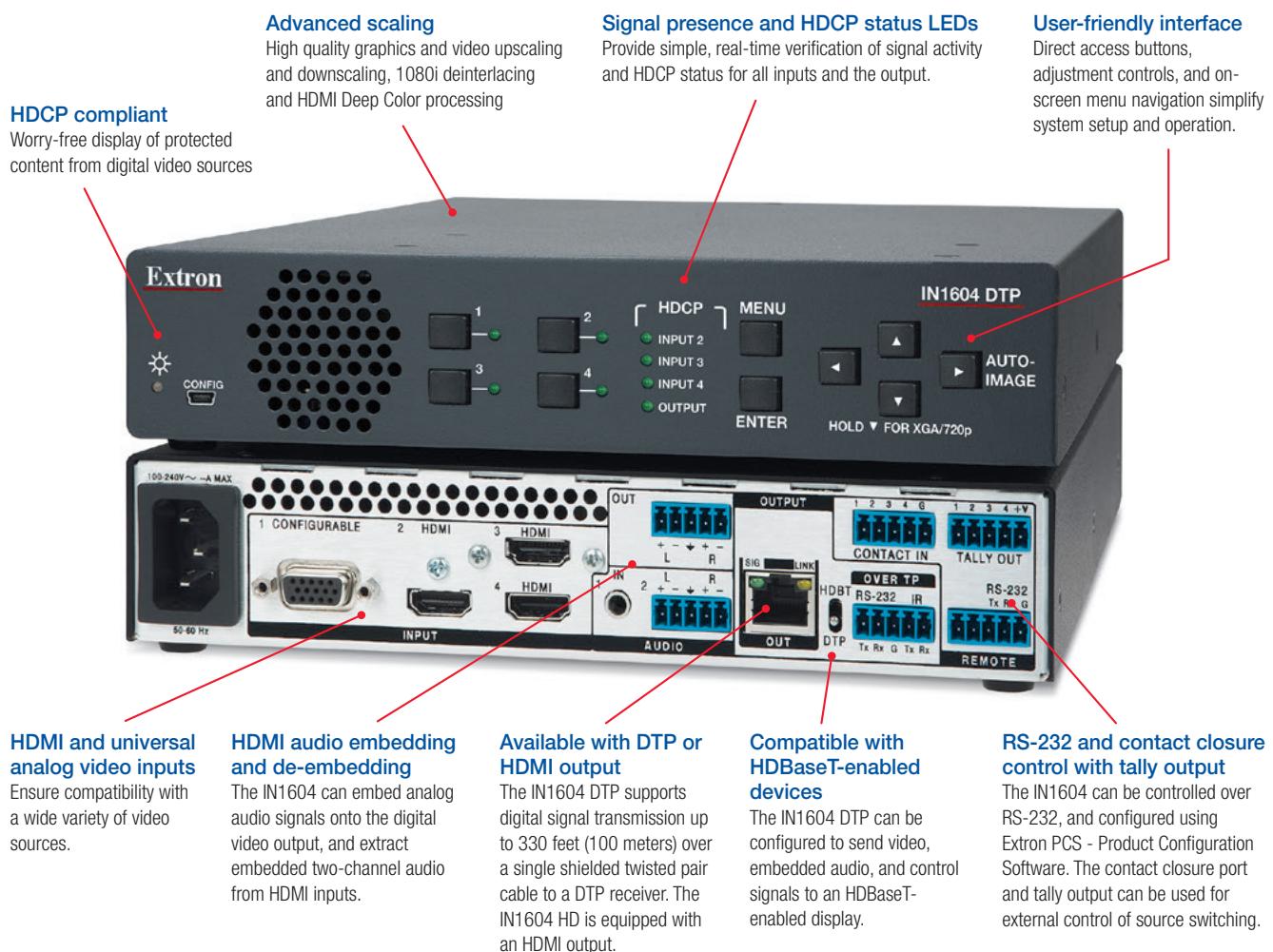
The unit offers several video test patterns and audio pink noise to facilitate proper system setup and calibration of display devices.

USB, RS-232, and contact closure remote control with tally output

Compact 1U, half rack width metal enclosure

The IN1604 can be installed underneath a conference table or in a lectern. Extron UTS Series and MBU 123 mounting hardware are available separately to facilitate under-table and surface mounting.

Overview



COMPATIBLE WITH EXTRON DTP SYSTEM PRODUCTS

DTP SYSTEMS The IN1604 DTP includes a DTP output that supports transmission of video with embedded audio, and bidirectional RS-232 and IR signals over a single shielded CATx cable up to 330 feet (100 meters). It may be paired with a DTP 230 or DTP 330 receiver, available in low-profile enclosures and Decora wallplate models. In addition, the IN1604 DTP can conveniently power the receiver over the same shielded CATx cable, and directly interface with control systems for sending RS-232 and IR control to display devices.

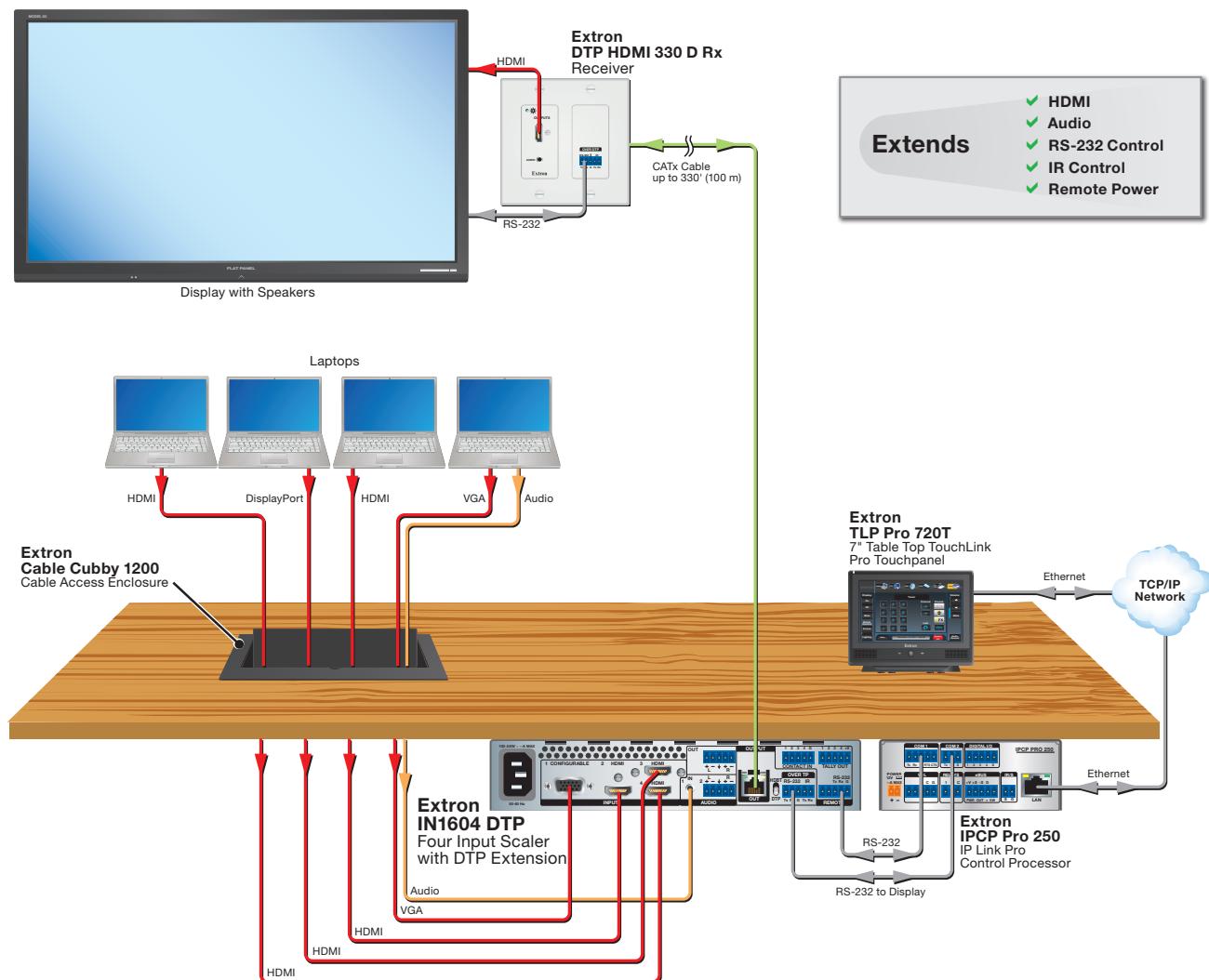
Additionally, the IN1604 DTP is ideal for integration as a sub-switching solution into a larger DTP-enabled switcher or matrix switcher, such as the Extron IN1608 or DTP CrossPoint 84.



Application

MEETING ROOM

The IN1604 DTP can serve as the central integration component for switching AV sources and optimizing video for a meeting room display. The compact enclosure of the IN1604 DTP allows convenient and inconspicuous placement under the conference table with Extron mounting accessories. At the table, the scaler supports several guest laptops connected via HDMI, a DisplayPort adapter, and VGA. In addition, the IN1604 DTP can automatically switch between inputs for simple, unmanaged operation. The IN1604 DTP scales the video inputs to match the native resolution of the flat-panel display and the DTP twisted pair output sends the AV signals over a shielded CATx cable to a wallplate receiver behind the display, simplifying the system design. As an additional integration convenience, the display can be controlled via RS-232, with the IN1604 DTP transmitting signals inserted from a control processor.



Specifications

VIDEO INPUT	
Number/signal type	1 analog RGBHV, component video (YUVi, YUVp, and YUV-HD), S-video, or composite video 3 HDMI (or DVI-D if using an adapter) (HDCP compliant)
Connectors	1 female 15-pin HD 3 female HDMI type A
VIDEO PROCESSING	
Analog sampling	12 bits per color; 13.5 MHz standard (video) 170 MHz standard (RGB)
Digital pixel data bit depth	8, 10, or 12 bits per channel; 165 MHz pixel clock (HDMI)
VIDEO OUTPUT	
Number/signal type	1 DTP 330 or HDBaseT, configurable (HDCP compliant)
IN1604 DTP	1 HDMI digital video (HDCP compliant)
Connectors	1 female RJ-45
IN1604 HD	1 female HDMI
Digital bit depth	8 or 10 bit, automatic
INTERCONNECTION BETWEEN IN1604 DTP AND DTP/HDBASET RECEIVER (IN1604 DTP ONLY)	
Connectors	1 female RJ-45
Termination standard	TIA/EIA-T568B
Signal transmission distance	Up to 330' (100 m) using shielded twisted pair cable or XTP DTP 24 STP cable
Cable requirements	Solid conductor, 24 AWG or better
Cable recommendations	400 MHz bandwidth, STP (shielded twisted pair)
NOTE: Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.	
AUDIO	
Frequency response	20 Hz to 20 kHz, ± 0.5 dB
THD + Noise	< 0.1% @ 1 kHz, 20 Hz to 20 kHz bandwidth (at nominal level)
S/N	>90 dB, at maximum output (unweighted)
AUDIO INPUT	
Number/signal type	1 analog stereo, unbalanced 1 analog stereo, balanced/unbalanced 3 digital stereo, de-embedded from HDMI (PCM only)
Connectors	(1) 3.5 mm stereo jack; tip (L), ring (R), sleeve (ground) (1) 3.5 mm captive screw connector, 5 pole 3 female HDMI type A
AUDIO OUTPUT	
Number/signal type	1 analog stereo or mono, balanced/unbalanced 1 DTP 30 (embedded digital audio and remote balanced/unbalanced analog audio) or HDBaseT (embedded digital)
NOTE: Remote analog audio output is not available in HDBaseT mode.	
IN1604 HD	1 analog stereo or mono, balanced/unbalanced 1 HDMI embedded
Connectors	(1) 3.5 mm captive screw connector, 5 pole 1 female RJ-45 IN1604 HD (1) 3.5 mm captive screw connector, 5 pole 1 female HDMI

COMMUNICATIONS – SCALING PRESENTATION SWITCHER		
Serial control port	IN1604 DTP	1 bidirectional RS-232, 3.5 mm captive screw connector, 5 pole (rear panel, uses 3 poles)
IN1604 HD		1 bidirectional RS-232, 3.5 mm captive screw connector, 3 pole (rear panel)
Contact closure		4 contact closure inputs on (1) 3.5 mm captive screw connector, 5-pole
Tally output		4 tally outputs on (1) 3.5 mm captive screw connector, 5-pole
USB control port		1 front panel female mini USB B
COMMUNICATIONS		
External device (pass-through, unidirectional or bidirectional) (RS-232/I2 over TP for the IN1604 DTP only)		
Serial control pass-through port	"Over DTP" output	RS-232 via (1) 3.5 mm captive screw connector, 5 pole (shared with IR port)
IR pass-through control port		TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz
GENERAL		
Power supply	Internal	Input: 100-240 VAC, 50-60 Hz
Remote power capability	IN1604 DTP only: supports one DTP Rx endpoint device	
NOTE: Remote power is not available in HDBaseT mode.		
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing	
Cooling		Fan, air flows front to rear, vents on front and rear
Mounting	Rack mount Furniture mount	Yes, with optional rack shelf Yes, with optional under-desk or through-desk mounting kit
Enclosure dimensions		1.75 H x 8.75" W x 8.5" D (1U high, half rack wide) (4.4 cm H x 22.2 cm W x 21.6 cm D) (Depth excludes connectors.)
Regulatory compliance	Safety EMI/EMC Environmental	CE, c-UL, UL CE, C-tick, FCC Class A, ICES, VCCI Complies with the appropriate requirements of RoHS, WEEE.
Warranty		3 years parts and labor
NOTE: All nominal levels are at $\pm 10\%$.		
Model	Version Description	Part number
IN1604 DTP	Four Input Scaler with DTP Output	60-1457-01
IN1604 HD	Four Input Scaler with HDMI Output	60-1457-02
Optional Accessories		
Model	Version Description	Part number
Half Rack Shelf System	Half-Rack Width Rack Shelf and Accessories	60-1251-xx
MBU 123	Low-Profile Mount Kit	70-212-01
UTS Series	Under Table Shelf System	70-1028-0x

For complete specifications, please go to www.extron.com
Specifications are subject to change without notice.

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